

(19) World Intellectual Property
Organization
International Bureau



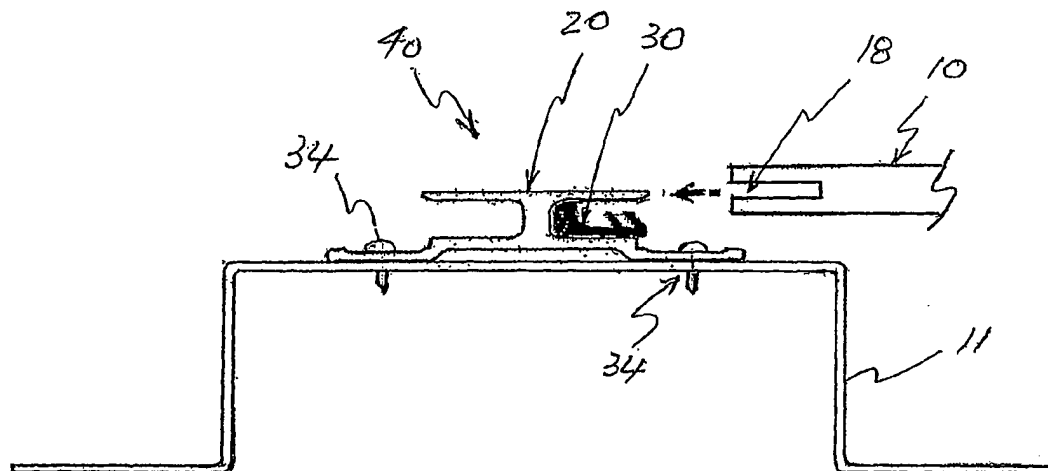
(43) International Publication Date
25 August 2005 (25.08.2005)

PCT

(10) International Publication Number
WO 2005/078210 A1

- (51) International Patent Classification⁷: **E04D 3/366**, E04F 19/06
- (21) International Application Number: PCT/AU2005/000156
- (22) International Filing Date: 10 February 2005 (10.02.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
2004900632 11 February 2004 (11.02.2004) AU
- (71) Applicant (for all designated States except US): **HILTIVE PTY LIMITED** [AU/AU]; 61 Jaeger Circuit, Bruce, ACT 2617 (AU).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **TURCO, Angelo Michael** [AU/AU]; 61 Jaeger Circuit, Bruce, ACT 2617 (AU).
- (74) Agent: **RAINEY, David**; Pizzeys, Level 2, Woden Plaza Offices, Woden, ACT 2606 (AU).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: BUILDING ASSEMBLY COMPONENT



(57) Abstract: A jointing element (40) is disclosed for supporting a plurality of cladding panels (10) relative to a building frame (11), the panels having slots (18) extending along the edges thereof, the jointing element including: an elongate support member (20) substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means (30) therein; whereby when a cladding panel is supported relative to the building or building frame by the jointing element, the outer flange is received in the slot along the edge of the cladding panel and the sealing means cooperates with the panel to substantially seal the space behind the cladding panel against the ingress of moisture.



WO 2005/078210 A1

"BUILDING ASSEMBLY COMPONENT"

Technical field

5 This invention relates to a building assembly component.

The invention has particular application to a building assembly for and method of fastening cladding panels to buildings or building frames, and to a jointing system for use in such an assembly and method.

10 Background of invention

A variety of methods and assemblies are known for fastening cladding panels to buildings or building frames. One such method and assembly is described in our International Patent Application PCT/AU01/01119, the
15 description of which is incorporated herein by reference.

For ease of reference the fastening assembly of this earlier application is illustrated in FIG 1 herein. Elongate jointing elements in the form of a channel 12 having laterally extending flanges 17 are fixed to a building frame 11 by screws 13. Sealing gasket 14 has a pair of ribs 16 extending laterally either
20 side of channel 12 and is fixed between channel 12 and frame 11. A cover strip 15 is fixed to channel 12 to cover channel portion 22. Cladding panels 10 with slots 18 along the edges are retained in position against the building frame with flanges 17 extending into slots 18.

25 Summary of invention

The present invention aims to provide an alternative to known building assemblies and methods, and to components for use therein.

In one aspect this invention resides broadly in a jointing system for
30 supporting a plurality of cladding panels relative to a building or building frame, the panels having slots extending along the edges thereof, the jointing system including:-

an elongate support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means therein;

5 whereby when a cladding panel is supported relative to the building or building frame by the support member, the outer flange is received in the slot along the edge of the cladding panel and the sealing means cooperates with the panel to substantially seal the space behind the cladding panel against the ingress of moisture.

10 In one preferred embodiment the sealing means can be an elongate gasket located in each recess. Alternatively, in another preferred embodiment the sealing means can be a beading of sealant inserted into each recess.

In another aspect the invention resides broadly in a method of fastening a plurality of cladding panels to a building or building frame, the panels having
15 slots extending along the edges thereof, the method including:-

fastening to the building or building frame a jointing system, the jointing system having an elongate support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to
20 form an elongate recess on each side of the web for receiving sealing means therein, and

supporting a cladding panel relative to the building or building frame with the outer flange of the elongate support member received in the slot along the edge of the cladding panel and the sealing means cooperating with the panel to
25 substantially seal the space behind the cladding panel against the ingress of moisture.

In one preferred embodiment the method includes inserting a beading of sealant into each recess. Alternatively the sealing means can be an elongate gasket pre-located in each recess.

30 It is preferred that the support element is an aluminium extrusion.

It is also preferred that the web is substantially centrally disposed and the longer inner flange extends at each side thereof beyond the ends of the shorter

outer flange sufficiently to allow screws to be fixed therethrough for fastening the support member to the building or building frame.

It is also preferred that the gasket includes longitudinally extending rib means and a longitudinally extending end portion such that on assembly when
5 the outer flange is received in the slot along the edge of the cladding panel, the rib means resiliently engages the inner surface of the cladding panels and the longitudinally extending end portion resiliently engages the inner edge of the cladding panel adjacent the slot.

It is also preferred that the jointing system includes another elongate
10 support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means therein;

wherein the distance between the outer surfaces of the flanges of this
15 other elongate support member is less than the distance between the outer surfaces of the flanges of the elongate support member defined above, such that when the elongate support members orthogonally abut with the outer surface of the longer inner flange of this other elongate support member resting on the inner surface of the longer inner flange of the elongate surface member
20 first defined above, the outer surfaces of the shorter outer flanges are substantially coplanar.

Description of Drawings

In order that this invention may be more easily understood and put into
25 practical effect, reference will now be made to the accompanying drawings which illustrate a preferred embodiment of the invention, wherein:-

FIG 2 is a cross-sectional view of a vertical or horizontal support member showing the gaskets removed therefrom;

FIG 3 is a cross-sectional view of a support member for abutting
30 orthogonally against the support member of FIG 2, showing the gaskets removed therefrom;

FIG 4 is a cross-sectional view of the support member of FIG 2 showing the support member of FIG 3 orthogonally abutted thereagainst;

FIG 5 is a cross-sectional view of the support member of FIG 2 showing one of the gaskets positioned in a recess, the support member being attached to a building frame, and showing a cladding panel to be assembled;

FIG 6 corresponds with the view of FIG 5 and shows the cladding panel assembled with the jointing system;

FIGS 7A to 7D show the method of fastening building panels to a building frame in which a bead of sealant is inserted in the recess in the support member rather than a gasket as illustrated in FIGS 5 and 6 above.

Description of Preferred Embodiment of Invention

As can best be seen in FIG 5, the jointing system 40 has an elongate support member 20 in the form of an aluminium extrusion which is substantially H-shaped in cross-section and is fastened along one longer flange to a building frame 11 by screws 34. A pair of elongate gaskets 30 (of which only one is shown in FIG 5) are positioned in opposite elongate recesses in support member 20. Cladding panel 10 has slots 18 along the edges and as seen in FIG 6 is supported relative to building frame 11 with the other (outer) flange of support member 20 received in slot 18. The cooperation of the edge of cladding panel 10 with gasket 30 effectively seals the space behind the cladding panel against the ingress of moisture.

Turning to FIG 2 it can be seen that support member 20 is substantially H-shaped in cross-section and has one longer flange 26,21,27 connected to a shorter flange 22 by a central web 23 with a pair of elongate recesses 24 and 25 being formed on opposite sides of web 23. The longer flange has a lower stepped central portion 21 and the sides of the longer flange extend beyond stepped portion 21, and beyond the side edges of shorter flange 22, forming a pair of lands 26 and 27 through which jointing system 40 can be screwed to building frame 11 as previously described.

Turning to FIG 3 which shows another support member 50 which abuts orthogonally against support member 20, it can be seen that support member

50 is substantially H-shaped in cross-section and has one longer flange 51 connected to a shorter flange 52 by a central web 53 with a pair of elongate recesses 54 and 55 being formed on opposite sides of web 53. The longer flange 51 does not have a lower stepped central portion. Sides of the longer flange 51 extend beyond the side edges of shorter flange 52, forming a pair of lands 56 and 57 through which jointing system 40 can be screwed to building frame 11 as previously described.

The distance between the outer surfaces of the flanges 51 and 52 of support member 50 (dimension "X" in FIG 3) is less than the distance between the outer surfaces of the flanges 26,27 and 22 of support member 20 (dimension "Y" in FIG 2), such that when support members 20 and 50 orthogonally abut (as seen in FIG 4) with the outer surface of inner flange 51 of support member 50 resting on the inner surface of inner flange 26,27 of support member 20, the outer surfaces of the outer flanges 52 and 22 are substantially coplanar. The dimension "X" corresponds with that of dimension "Z" in FIG 2.

As seen in FIG 2, elongate gasket 30 is somewhat L-shaped in cross-section with a pair of ribs 31 extending from one arm 32 of the L-section and constituting longitudinally extending rib means, and the other arm 33 of the L-section constituting a longitudinally extending end portion. Gasket 30 is slightly oversized with respect to recesses 24 and 25 and being resilient, forms an interference fit when inserted therein.

As seen in FIG 6, when cladding panel 10 is fully positioned on jointing system 40, the rib means 31 resiliently engage the inner surface of the cladding panels and the longitudinally extending end portion 33 resiliently engages the inner edge of the cladding panel, thereby effectively sealing the space behind the cladding panel against the ingress of moisture. Cooperation of this inner edge of cladding panel 10 with the resiliently compressible end portion 33 of gasket 30 allows for thermal expansion of the cladding panel due to seasonal temperature fluctuations.

As seen in FIGS 7A to 7D, rather than the support member 20 being fixed to frame 11 with gaskets in the recesses, it can be fixed to the frame without gaskets, the sealing being effected by running a beading of sealant 61

along the recesses as seen in FIGS 7B and 7C. This can be done in conventional manner by a sealing gun or the like, or can be jiggged for automatic application to ensure quality control. Panel 10 is then fitted onto support member 20 in known manner with the inner edge of groove 18 biting into sealant bead 61 to effect a seal as seen in FIG 7D.

It will be appreciated that although the preferred embodiments describe fitting the panels and the support members to a building frame, these could also be fixed to a building *per se* as, for example, when cladding an older building or when fastening cladding to a new building of concrete slab construction or the like. In such cases, the support members can be affixed directly to the building, or as is preferred, bearers of top hat configuration in cross section are fixed to the building. To correct for any surface irregularities in the building, the top hat member is packed out as required to provide an accurate laser surveyed top surface on the top hat members. Support members in accordance with the invention are then fixed to the top hat members and the panels then fitted to the support members in the manner described above.

It will also be appreciated that although the preferred embodiments describe fitting the panels and the support members to the exterior of a building, the invention is equally applicable for fixing panels in interior walling within a building.

The jointing system of the present invention and building systems and methods utilising the system have a number of advantages over known systems.

For example in comparison with the product described in FIG 1, assembly of the various components in the building system is much simpler with a single component (jointing system 40) being fastened to the building frame, rather than positioning gasket 14 behind channel 12 which is then fastened to frame 11 and cover strip 15 then fixed over the channel.

Another advantage of the present arrangement is that manufacture of the cladding panel is simplified. Although cladding panel 10 in FIG 1 is shown with the lips forming slot 18 being of equal length, in practice it has proved necessary to cut back the innermost lip to allow for thermal expansion and

avoid buckling of the panel in the event that the inner lip were to engage the wall of channel 12 upon expansion. In the present invention the two lips can remain equal, thereby obviating one operation in manufacture of the panels.

- 5 It will of course be realised that whilst the above has been given by way of an illustrative example of this invention, all such and other modifications and variations hereto, as would be apparent to persons skilled in the art, are deemed to fall within the broad scope and ambit of this invention as is herein set forth.

The claims defining the invention are as follows:-

1. A jointing system for supporting a plurality of cladding panels relative to a building or building frame, the panels having slots extending along the edges thereof, the jointing system including:-
 - an elongate support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means therein;
 - whereby when a cladding panel is supported relative to the building or building frame by the jointing system, the outer flange is received in the slot along the edge of the cladding panel and the sealing means cooperates with the panel to substantially seal the space behind the cladding panel against the ingress of moisture.
2. A jointing system as claimed in Claim 1, wherein the support element is an aluminium extrusion.
3. A jointing system as claimed in Claim 1, wherein the sealing means is a beading of sealant.
4. A jointing system as claimed in Claim 1, wherein the sealing means is an elongate gasket located in each recess.
5. A jointing system as claimed in Claim 4, wherein the gasket includes longitudinally extending rib means and a longitudinally extending end portion such that on assembly when the outer flange is received in the slot along the edge of the cladding panel, the rib means resiliently engages the inner surface of the cladding panels and the longitudinally extending end portion resiliently engages the inner edge of the cladding panel adjacent the slot.

6. A jointing system as claimed in Claim 1, wherein the web is substantially centrally disposed and the longer inner flange extends at each side thereof beyond the ends of the shorter outer flange sufficiently to allow screws to be fixed therethrough for fastening the support member to the building or building
5 frame.

7. A jointing system as claimed in Claim 1, and including another elongate support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being
10 connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means therein;

wherein the distance between the outer surfaces of the flanges of this other elongate support member is less than the distance between the outer surfaces of the flanges of the elongate support member defined in claim 1, such
15 that when the elongate support members orthogonally abut with the outer surface of the longer inner flange of this other elongate support member resting on the inner surface of the longer inner flange of the elongate surface member defined in claim 1, the outer surfaces of the shorter outer flanges are substantially coplanar.

20

8. A method of fastening a plurality of cladding panels to a building or building frame, the panels having slots extending along the edges thereof, the method including:-

fastening to the building or building frame a jointing system, the jointing
25 system having an elongate support member substantially H shaped in cross-section and having a longer inner flange for fastening to the building or building frame, the inner flange being connected by a web to a shorter outer flange to form an elongate recess on each side of the web for receiving sealing means therein, and

30 supporting a cladding panel relative to the building or building frame with the outer flange of the support member received in the slot along the edge of the cladding panel and the sealing means cooperate with the panel to

substantially seal the space behind the cladding panel against the ingress of moisture.

9. A method of fastening a plurality of cladding panels to a building or
5 building frame as claimed in claim 8, wherein the sealing means is an elongate gasket pre-located in each recess.

10. A method of fastening a plurality of cladding panels to a building or
building frame as claimed in claim 8, and including:-
10 inserting a beading of sealant in each recess.

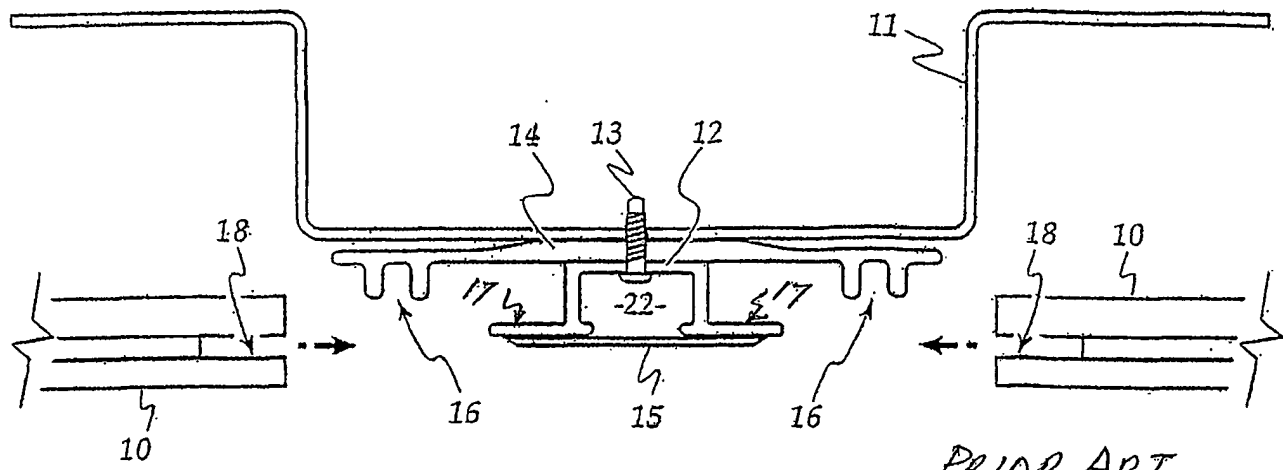


FIG. 1

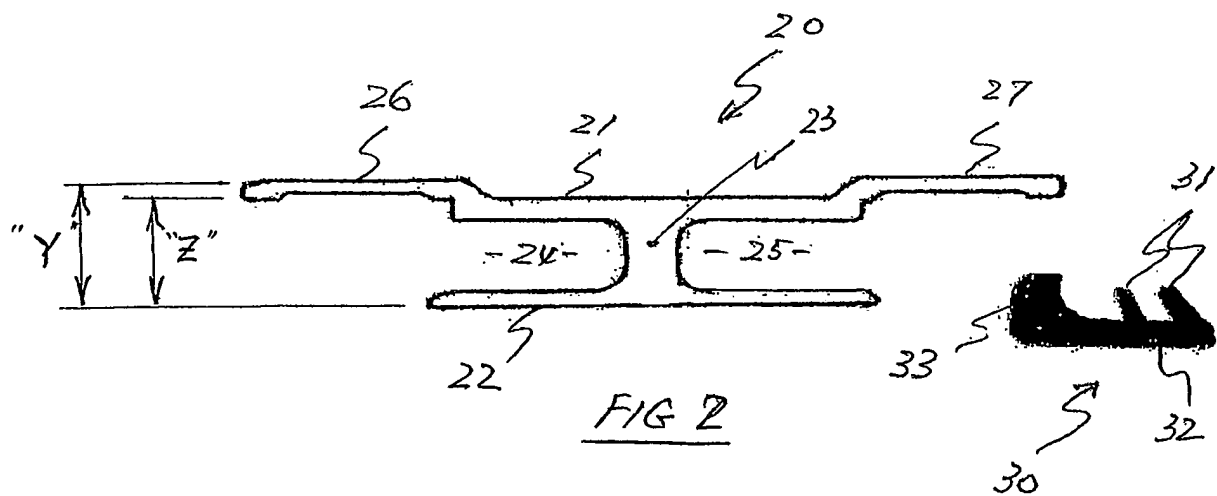


FIG 2

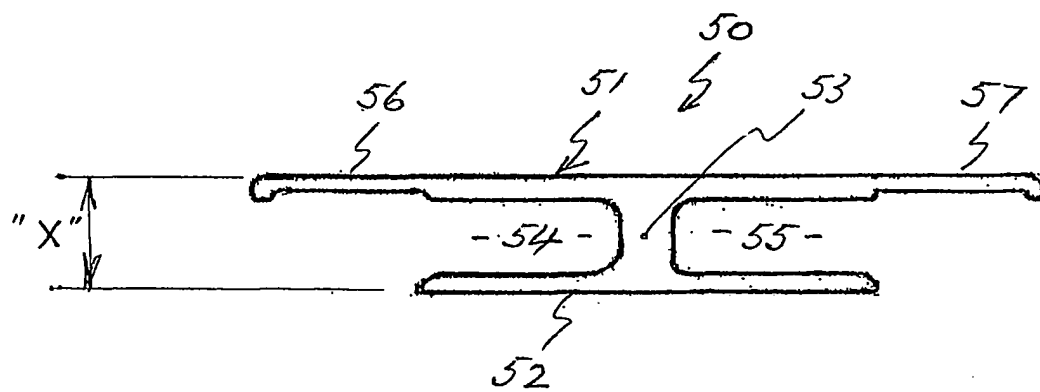
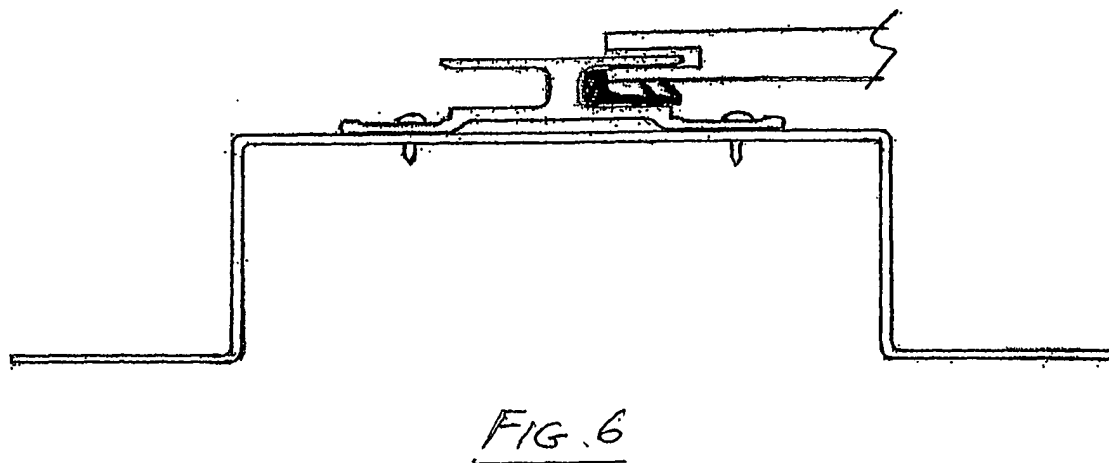
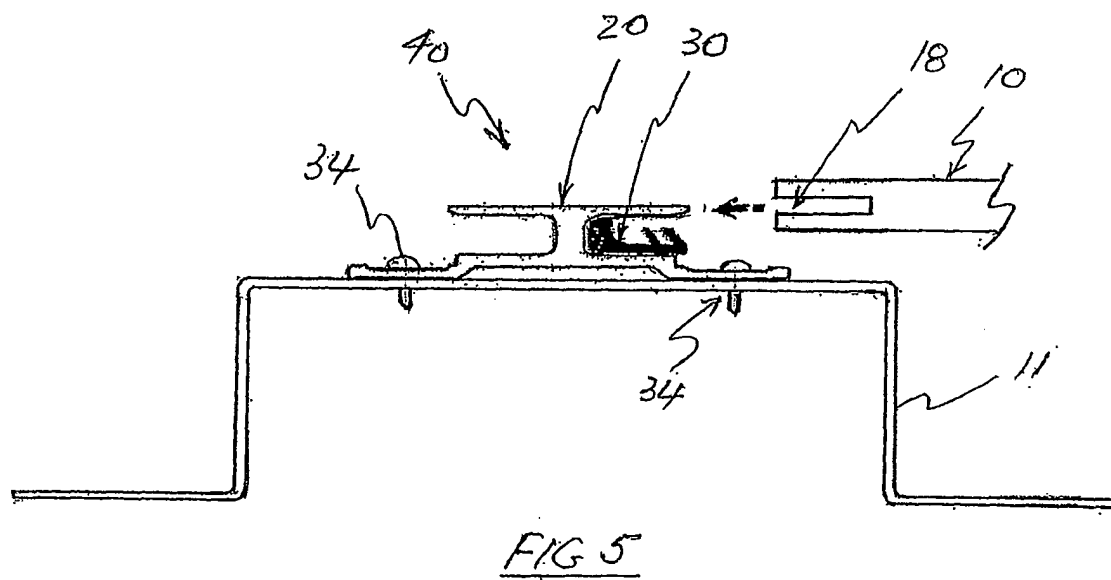
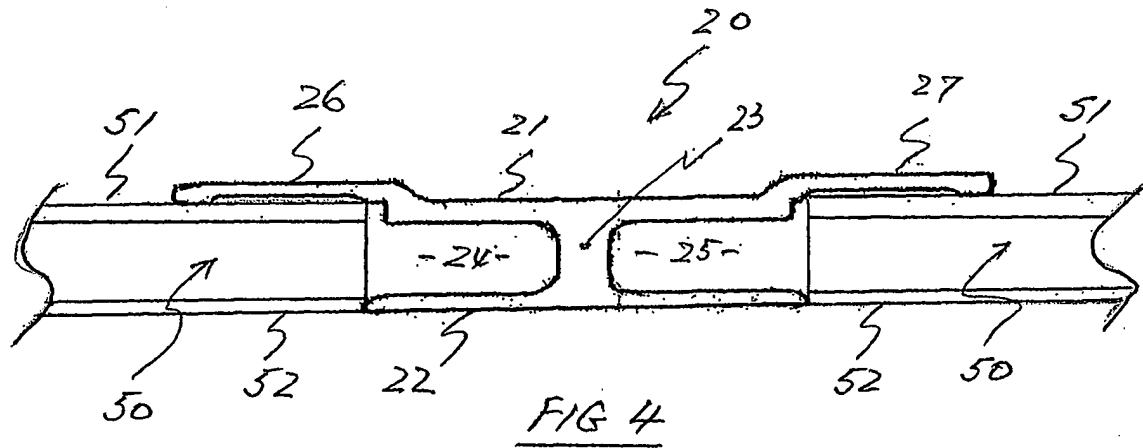
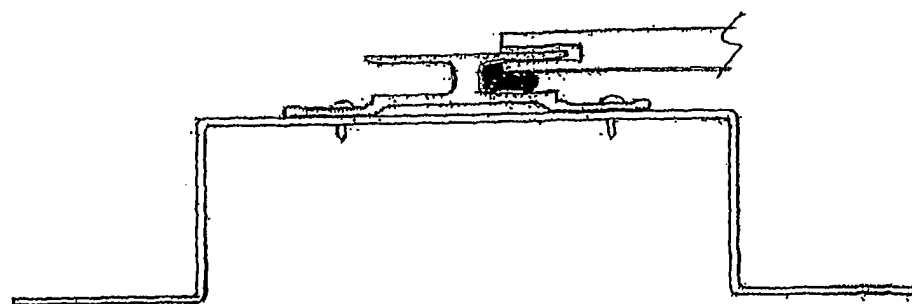
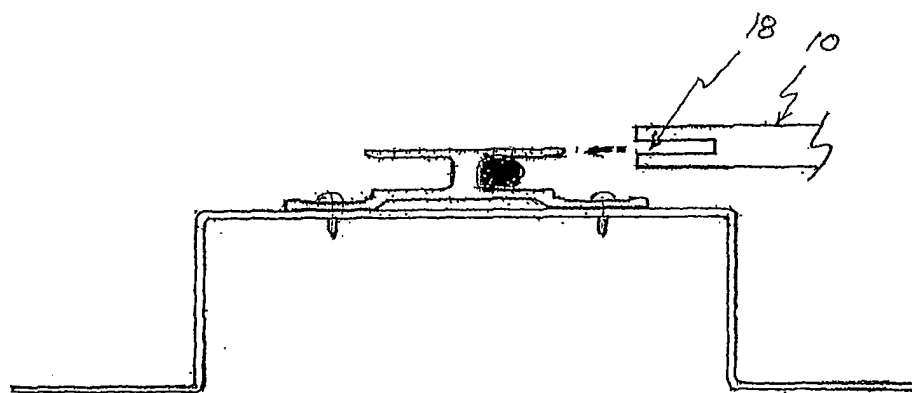
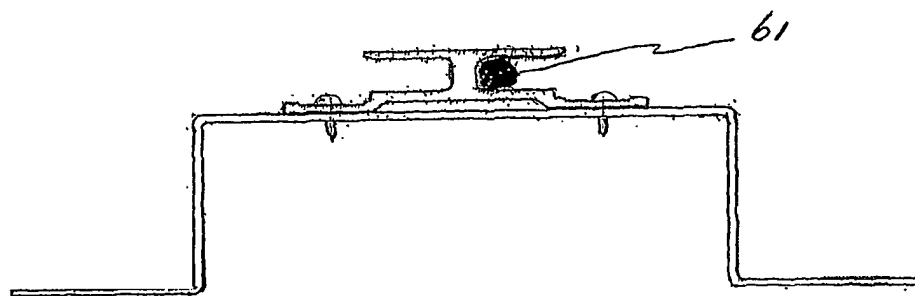
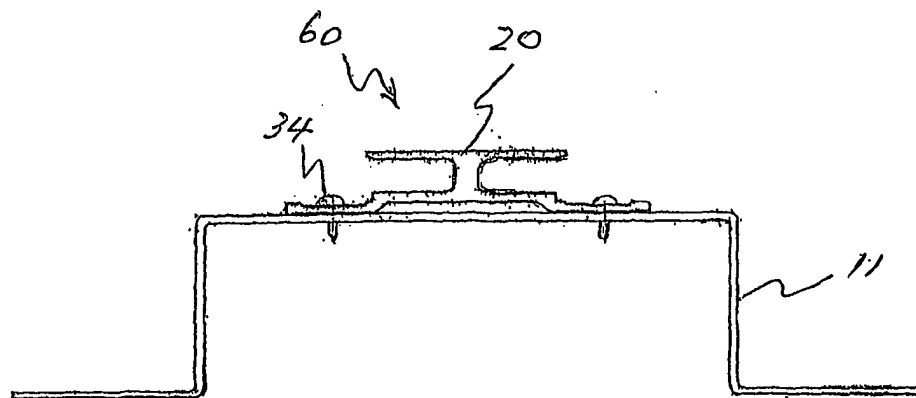


FIG 3





INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2005/000156

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: **E04D 3/366, E04F 19/06**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI: IPC E04B 1/-, 2/-, E04C 2/-, E04F 13/- and keywords; panel, sheet, board, joint, connection, flange, slot, groove, seal, gasket, water, moisture, strip, prevent & similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AU 735352 (33450/01) B (HILTIVE PTY LTD) 5 July 2001 See the figures	
A	DE 29907385 U1 (CORRECTA GMBH) 5 October 2000 See the figures	

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 2 March 2005	Date of mailing of the international search report 14 MAR 2005
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized officer VINCE BAGUSAUSKAS Telephone No : (02) 6283 2110

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2005/000156

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
AU	735352	AU	87356/01	CA	2423734	EP	1328689
		NZ	507152	NZ	525507	US	2004010998
		WO	0227109				
DE	29907385						
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.							
END OF ANNEX							